V 12 N-chlorotaurine demonstrates potent microbicidal activity against multiresistant bacteria

Celine Anich, Dorothea Orth-Höller, Michaela Lackner, Markus Nagl

Institute of Hygiene and Medical Microbiology, Medical University of Innsbruck, Innsbruck, Austria

Background: *N*-chlorotaurine is an endogenous antiseptic that can be applied topically as a well-tolerated anti-infective at many body sites including the bronchopulmonary system via inhalation because of its mild activity and good tolerability. Considering its application in chronic diseases such as chronic bronchitis and cystic fibrosis, we desired to prove its activity against antibiotic-multiresistant bacteria.

Methods: The microbicidal activity of *N*-chlorotaurine against relevant antibiotic-multiresistant bacteria was tested in quantitative killing assays against a panel of clinical isolates.

Results: *N*-chlorotaurine (1%, 55 mM) reduced the number of CFU of strains of methicillin-resistant *Staphylococcus aureus*, linezolid-resistant *S. epidermidis*, vancomycin-resistant, and linezolid- and vancomycin-resistant *Enterococcus faecium*, 3MRGN and 4MRGN *Escherichia coli*, *Pseudomonas aeruginosa*, *Acinetobacter baumannii*, and *Klebsiella pneumoniae* by at least 2 log10 steps after 15 min and completely or nearly to the detection limit after 30 min at pH 7.1 and 37°C. The ascending order, from the lowest to the highest susceptibility was *S. aureus*, *S. epidermidis*, *A. baumannii* and *E. faecium* (LVRE) < *E. coli*, *P. aeruginosa*, *E. faecium* (VRE) < *K. pneumoniae*. Although these differences were statistically significant, they appear too small for a clinical relevance, and all strains proved to be fully susceptible.

Conclusions: The activity of *N*-chlorotaurine against these clinical isolates proved to be similar to that against non-resistant ATCC strains and therefore not to be influenced by antibiotic resistance. This can be explained by the oxidizing and chlorinating mechanism of action of *N*-chlorotaurine, which leads to an attack of multiple targets in the microorganisms. Therefore, the antiseptic is of advantage to antibiotics when topical treatment is estimated as sufficient.

V 13 Microbiology analytics and clinical tool for reporting pathogens and AMR

Koller Walter1, Adlassnig Klaus-Peter1, 2, Thalhammer Florian1, Willinger Birgit1, Rappelsberger Andrea1

1 Medical University of Vienna, 2 Medexter Healthcare Vienna

Background: Antimicrobial therapy correctness, antimicrobial resistance (AMR) as well as adverse events prevention are of increasing clinical and epidemiological importance. Hence, antimicrobial stewardship programs (ASPs) rely on monitoring, analyzing, and reporting of microbiological test results which can effectively be supported by information technology (IT).

Material/methods: At the University Hospital Vienna (UHV), antimicrobial stewardship involves many stakeholders: clinicians, laboratory and infection control personnel, hospital and quality management, epidemiologists, and researchers. In such a diverse environment, computer-based support is essential. Over the last years, a versatile server- and web-application-based software, called Momo (monitoring of microorganisms), was developed and put into operation. A large array of antimicrobial stewardship demands could thus be met.

Results: Momo is in routine operation since September 2018. It receives all relevant data on bacteria, fungi, PCR, serology, toxins, and microscopy from the UHV's microbiology laboratory. Momo provides support through (a) single patient overviews, (b) customizable queries with full microbiological data, (c) frequency distributions of the selected parameters, (d) graphically displaying AMR patterns, and (e) displaying AMR changes over time. Careful consideration was given to the terminology system. A specific module supports timely management of main terms, synonyms, changes in taxonomy, and multiple superordinate concepts. In its new release, Momo can be accessed

with one click from the UHV's intensive care information systems as well as from the UHV's overall hospital information system. Patient- as well as ward-specific microbiological results may be displayed.

At present, more than 1.7 million reports are available for analysis.

Conclusions: Momo is well integrated and increasingly used in UHV; at present several hundred times a week. Versatile analytic tools (patient- as well as epidemiology-oriented) combined with one click access make it an effective ASP supporting tool for daily clinical use.

SITZUNG 4: UMWELTHYGIENE

V 14 Environment and health: Assessing technology-critical elements in urban spheres

Daniela Haluza1, Philipp Spörl2, Aron Göndör3, Johanna Irrgeher4, Thomas Prohaska4, Simone Trimmel4, Bernhard Scharf2, Dominik Wiedenhofer5, André Baumgart5, Anne Kasper-Giebl3, Leo Capari1, Ulrike Pitha2

1 Department of Environmental Health, Center for Public Health, Medical University of Vienna, Kinderspitalgasse 15, 1090 Vienna, Austria, 2 Department of Civil Engineering and Natural Hazards, Institute of Soil Bioengineering and Landscape Construction, University of Natural Resources and Life Sciences, Vienna, Peter-Jordan-Straße 82, 1190 Vienna, Austria, 3 Institute of Chemical Technologies and Analytics, TU Wien, Getreidemarkt 9/164, 1060 Vienna, Austria, 4 General and Analytical Chemistry, Montanuniversität Leoben, Franz Josef-Straße 18, 8700 Leoben, Austria, 5 Department of Economics and Social Sciences, Institute of Social Ecology University of Natural Resources and Life Sciences, Vienna (BOKU), Schottenfeldgasse 29, 1070 Vienna, Austria

Given the boom in new technologies, technology-critical elements (TCEs) including germanium, gallium, indium and others are increasingly released into the environment. However, scientific evidence is lacking regarding quantities, environmental cycles, and potential health hazards. The research project *TecEUS - Technology-Critical Elements in Urban Spheres* aims to assess the release, exposure, and accumulation of selected TCEs in the urban environment of Vienna. One major motivation is to systematically explore the effectiveness of urban green façades as filters for TCEs and their potential as human health preventive measure. A mobile module-based wind tunnel (WT) was developed to investigate the interaction between airborne particulate matter (PM) and various surface structures. The external dimensions were 4.33 m × 1.96 m × 1.73 m (lwh). The tunnel provided a cross-section of 0.40 m × 1.10 m (wh) and a total volume of 2.84 m3. An exchangeable test section in the WT offered a vertical area of one square meter to introduce variable installations. We measured atmospheric parameters (temperature, humidity, flow speeds and flow directions). Losses of ambient PM within the blank tunnel were less than 10% for particle counts (>0.25 µm), while smaller losses were obtained for PM1 and PM2.5. Due to the modular design, the WT could be divided into seven segments enabling flexibility in setting, easy transport and set up at different locations. So, real-time and long-term collection of ambient air pollutions on plant surfaces located in the WT allows for determining TCE detection.

The TecEUS project is funded by the Austrian Science Fund FWF Stand-alone Project: P 33099-N. https://www.teceus.at/.

Publication: Spörl P, Göndör A, Irrgeher J, Prohaska T, Trimmel S, Capari L, Haluza D, Scharf B, Kasper-Giebl A, Pitha U. Development of a Mobile Module-Based Wind Tunnel for the Determination of Collection Efficiencies of Particulate Matter on Surface Structures. Sustainability. 2021; 13(17):9565. https://doi.org/10.3390/su13179565

ÖGHMP
Österreichische Gesellschaft
für Hygiene, Mikrobiologie und
Präventivmedizin

37. JAHRESTAGUNG

31. Mai – 02. Juni 2022

Kongresshaus Bad Ischl

ABSTRACTS

ÖSTERREICHISCHE GESELLSCHAFT FÜR HYGIENE, MIKROBIOLOGIE UND PRÄVENTIVMEDIZIN

ÖGHMP - Österreichische Gesellschaft für Hygiene,
Mikrobiologie und Präventivmedizin c/o MAW
Freyung 6, 1010 Wien
(p) +43-1 536 63-38, (f) +43-1 535 60 16
(e) oeghmp@media.co.at, (w) www.oeghmp.at
ZVR-Zahl: 720944593

ISBN-Nr. 978-3-9503828-4-6